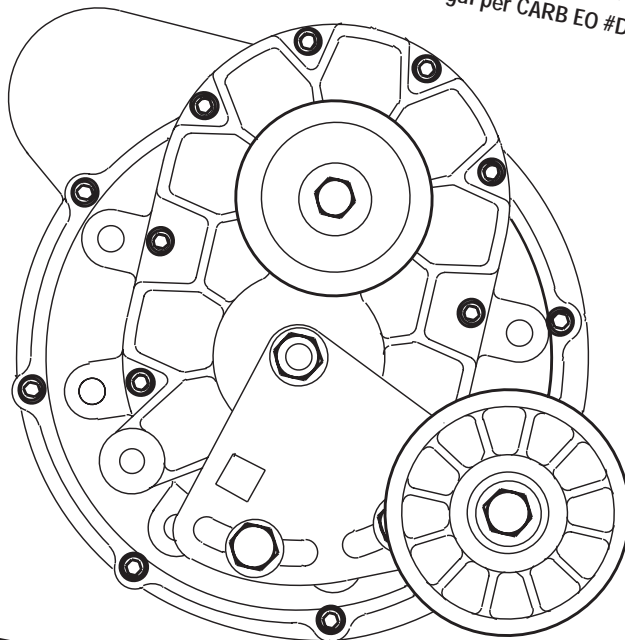


Ford 5.0 and 5.8 Bronco/F-Series/Lightning Supercharger System Installation Instructions

'87-'96 5.8L F-Series Truck - 50 State Smog Legal per CARB EO #D-213-16
'93-'95 5.8L Lightning Truck - 50 State Smog Legal per CARB EO #D-213-16
'87-'96 5.0L F-Series Truck - 50 State Smog Legal per CARB EO #D-213-16



ENGINEERING, INC.

1650 PACIFIC AVENUE • CHANNEL ISLANDS, CA 93033-9901

FOREWORD

Proper installation of this supercharger kit requires general automotive mechanic knowledge and experience. Please browse through each step of this instruction manual *prior* to beginning the installation to determine if you should refer the job to a professional installer/technician. Please call Vortech Engineering for possible installers in your area.

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IMPORTANT NOTICES!

BEFORE BEGINNING INSTALLATION

On 1993 and later model years, it will be necessary to replace the fan blade assembly (not the entire fan clutch assembly) with an earlier model unit. The Ford part number is E7TZ-8600B. *Refer to page 5, item 8 of this manual.*

This product is protected by state common law, copyright and/or patent. All legal rights therein are reserved. The design, layout, dimensions, geometry, and engineering features shown in this product are the exclusive property of Vortech Engineering, Inc. This product may not be copied or duplicated in whole or part, abstractly or fundamentally, intentionally or fortuitously, nor shall any design, dimension, or other information be incorporated into any product or apparatus without prior written consent of Vortech Engineering, Inc.

SPECIAL NOTICE CONCERNING THE CRANE IGNITION SYSTEM

The ignition system, manufactured by Crane Electronics, included in this kit is serviced exclusively by the manufacturer. Crane Electronics warrants this product to be free from defects in material and workmanship under normal use and if properly installed for a period of one (1) year from the date of purchase. In case of malfunction, this unit will be repaired free of charge according to the terms of the warranty. If found to be defective as mentioned above, it will be repaired or replaced if returned prepaid along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of Crane Electronics and/or Vortech Engineering, Inc. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall Crane Electronics and/or Vortech Engineering, Inc. be liable for labor charges, special or consequential damages.

When returning this unit for service, proof of purchase must be supplied for warranty verification. After the warranty period has expired, repair service is charged between a minimum and maximum charge. In either case, please send the unit prepaid with proof of purchase to the attention of:

**Crane Electronics
Customer Service Department
530 Fentress Boulevard
Daytona Beach, Florida, 32114
Phone: (904) 258-6167
Fax: (904) 258-6174
www.cranecams.com**

The repaired unit will be returned as soon as possible after receipt, COD for any charges. Be sure you include a detailed account of any problems experienced, the type of vehicle and any modifications.

Should you have any technical or installation questions regarding this unit, contact Vortech Engineering, Inc. directly at (805) 247-0226 M-F 8:00AM - 4:30PM (PST).



SPECIAL NOTICE CONCERNING THE MSD IGNITION SYSTEM

The MSD Boost Timing Master, manufactured by Autotronic Controls Corporation, included in this kit is serviced exclusively by the manufacturer. Autotronic Controls Corporation warrants this product to be free from defects in material and workmanship under normal use and if properly installed for a period of one (1) year from the date of purchase. In case of malfunction, this unit will be repaired free of charge according to the terms of the warranty. If found to be defective as mentioned above, it will be repaired or replaced if returned prepaid along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of Autotronic Controls Corporation and/or Vortech Engineering, Inc. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall Autotronic Controls Corporation and/or Vortech Engineering, Inc. be liable for labor charges, special or consequential damages.

When returning this unit for service, proof of purchase must be supplied for warranty verification. After the warranty period has expired, repair service is charged between a minimum and maximum charge. In either case, please send the unit pre-paid with proof of purchase to:

**Autotronic Controls Corporation
Customer Service Department
12120 Esther Lama
Suite #114
El Paso, Texas, 79936
(915) 855-7123 Technical**

The repaired unit will be returned as soon as possible after receipt, COD for any charges. Be sure you include a detailed account of any problems experienced, the type of vehicle and any modifications.

Should you have any technical or installation questions regarding this unit, contact Vortech Engineering, Inc. directly at (805) 247-0226 M-F 8:00AM - 4:30PM (PST).



Installation Instructions for

'87-'96 5.8L F-Series Truck - 50 State Smog Legal per CARB EO #D-213-16
'93-'95 5.8L Lightning Truck - 50 State Smog Legal per CARB EO #D-213-16
'87-'96 5.0L F-Series Truck - 50 State Smog Legal per CARB EO #D-213-16

Congratulations on selecting the most technically innovative, best performing and best backed automotive supercharger available today... the VORTECH V-2® supercharger!

Before beginning this installation, please read through this entire instruction booklet and the Street Supercharger System Owner's Manual which includes the Automotive Limited Warranties Program and the Warranty Registration form.

Vortech supercharger systems are performance improving devices. In most cases, increases in torque of 30 - 35% and horsepower of 35 - 45% can be expected with the boost levels specified by Vortech Engineering. This product is intended for use on healthy, well maintained engines. Installation on a worn-out or damaged engine is not recommended and may result in failure of the engine as well as the supercharger. **Vortech Engineering is not responsible for engine damage.**

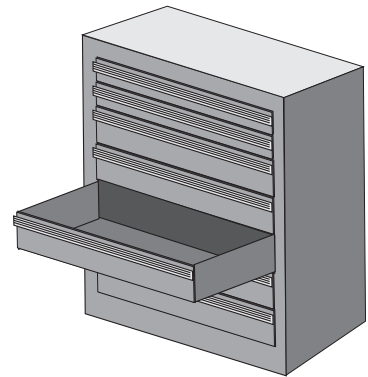
Installation on new vehicles will not harm or adversely affect the break-in period so long as factory break-in procedures are followed.

For best performance and continued durability, please take note of the following key points:

1. Use only premium grade fuel 92 octane or higher (R+M/2).
2. The engine must have stock compression ratio.
3. If the engine has been modified in any way, check with Vortech prior to using this product.
4. Always listen for any sign of detonation (pinging) and discontinue hard use (no boost) until problem is resolved.
5. Perform an oil and filter change upon completion of this installation and prior to test driving your vehicle. Thereafter, always use a high grade SF rated engine oil or a high quality synthetic, and change the oil and filter every at least 3,000 miles. **Never attempt to extend the oil change interval beyond 3,000 miles, regardless of oil manufacturer's claims; potential damage to the supercharger may result.**
6. Before beginning installation, replace all spark plugs that are older than 1 year or 10,000 miles with original heat range plugs as specified by the manufacturer and reset timing to factory specifications (follow the procedures indicated within the factory repair manual and/or as indicated on the factory underhood emissions tag). **Do not use platinum spark plugs unless they are original equipment.** Change spark plugs at least every 15,000 miles and spark plug wires at least every 50,000 miles.

TOOL & SUPPLY REQUIREMENTS

- Factory repair manual
- Timing light
- 3/8" socket and drive set: SAE & metric
- 1/2" breaker bar and 4" extension
- Flat #2 screwdriver
- Phillips #2 screwdriver
- Large screwdriver or pry bar
- Adjustable wrench
- Open end wrenches: 3/8", 7/16", 9/16", 3/4", 7/8"
- Drill motor
- 9/16" and 3/32" drill bits
- Power steering pump pulley puller and installer (rent if you do not own)
- 3/8" NPT tap & handle
- Ford Snaplock fuel fitting disconnect tool
- Silicone sealer
- Heavy grease
- 1993 and later models: Ford Fan Blade Assembly part # E7TZ-8600B



If your vehicle has in excess of 10,000 miles since its last spark plug change you will also need:

- Spark Plug Socket
- NEW Spark Plugs



1987-1996 FORD 5.8 TRUCK

Part No. 4FC218-030SQ

PARTS LIST

IMPORTANT: Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.

Part Number	Description	Quantity	Part Number	Description	Quantity
2E228-030	SUPERCHARGER ASSEMBLY	1	4FC238-068	FMU (WITH LINES)	1
2E128-030	V-2 SQ Supercharger	1	6Z110-111	12:1 black fuel management unit	1
2A036-287	2.87" supercharger drive pulley	1	4FC145-156	Male fuel line assembly	1
8R101-001	6 rib pulley retainer assembly	1	4FC146-166	Female fuel line assembly	1
4FC111-021	MOUNTING BRACKET ASSEMBLY	1	4FC049-196	5/32" x 48" vacuum line	1
4FC011-021	Mounting bracket	1	7U100-055	6" nylon tie wraps	2
4FC010-034	Mounting plate	1	7E010-046	#8 x 3/4" sheet metal screws	2
7A375-100	3/8-16 x 1" bolts	9			
7K375-040	3/8" AN washers	7	4FB101-002	FUEL PUMP ASSEMBLY	1
4FC116-081	WATER PUMP PULLEY ASSEMBLY	1	8F001-002	155 Inline fuel pump	1
4FC016-081	Water pump pulley	1	7R003-008	1/2" adel clamp	1
7U313-124	5/16-24 x 2.5" studs	4	7R003-024	1-1/2" adel clamp	1
7J312-000	5/16" washers	4	7R001-004	#4 hose clamps	5
7L312-000	5/16" lock washers	4	7U100-055	6" nylon tie wraps	6
7F312-021	5/16-24 nuts	4	5W001-011	16-14GA eyelets	3
4FC040-160	Water pump pilot	1	5W001-010	16-14GA female slides	3
4FC112-010	AIR INTAKE ASSEMBLY	1	5W118-021	10" 18GA black wire	1
4FC013-021	Air filter cover	1	5W118-034	156" 18GA red wire	1
7S350-200	3-1/2" x 2" sleeve	1	5W001-002	Fuse tap	1
4FA012-012	90° intake elbow	1	7P312-003	5/16" female fuel connector	1
4FC012-010	3-1/2" x 20" flex hose	1	7P156-082	5/32" tee	1
7R002-056	#56 hose clamps	2	7U129-012	5/32" x 12" vacuum hose	1
7R002-052	#52 hose clamps	2	7U100-066	11" nylon tie wrap	1
4FC112-020	AIR DISCHARGE ASSEMBLY	1	5W001-012	22GA red solderless connector	1
4FC012-030	Discharge duct	1	8D002-001	Fuel pressure switch	1
7S225-125	2-1/4" x 1-1/4" sleeves	2	5W001-015	20A blade type fuse	1
7S275-200	2-3/4" x 2" sleeve	1	5W001-014	Fuse holder	1
7R002-044	#44 hose clamps	2	7P125-105	1/8" NPT to 5/32" barb	1
7R002-036	#36 hose clamps	4	7J010-001	#10 washers	6
4FC116-011	CRANK PULLEY ASSEMBLY	1	7F010-032	10-32 nuts	3
4FC016-011	Crank pulley	1	7C011-075	10/32" x 3/4" bolts	3
4FC017-041	Crank pulley spacer	1	7U131-024	5/16" x 24" fuel hose	1
7A375-325	3/8-16 x 3-1/4" bolts	4	7U132-050	12mm x 30" fuel hose	1
7J375-044	3/8" SAE washers	4	7P500-004	Fuel fitting adaptor	1
7L375-075	3/8" lock washers	4	5A101-001	STAND ALONE ASSEMBLY	1
2A046-580	4060580 Goodyear belt	1	7P156-082	5/32" tee	1
4FC130-026	OIL FEED LINE ASSEMBLY	1	5A002-002	EFI Ford wiring harness	1
4FC047-176	1/4" x 22" oil feed line	1	5A001-001	Stand alone ignition retard	1
7P125-103	-4 x 45° 1/8" NPT male elbow	1	7U129-024	5/32" x 24" vacuum line	1
7P250-066	#4 swivel x 1/4" hose barb fittings	2	4FE111-032	BELT TENSIONER ASSEMBLY	1
7P525-067	.500 crimp ferrules	2	7J012-092	12mm washers	3
7P250-122	AN917 1/4" pipe thread tee	1	4FA011-032	Tensioner plate	1
7P250-123	1/4" NPT x 1-1/2" nipple	1	4GF116-160	Idler ribbed pulley assembly	1
7P250-036	#4 flare to 1/4" NPT fitting	1	2A017-010	Idler pulley spacer	1
4FC130-036	OIL DRAIN ASSEMBLY	1	7C012-020	12mm 1.75 x 20mm bolts	2
4FC048-186	1/2" x 16" oil drain line	1	7C012-022	12mm 1.75 x 22mm thin head bolt	1
7P375-033	3/8" NPT x 3/8" NPT street elbow	1	7G010-175	12mm x 1.75 nut	1
7P375-017	3/8" NPT x 1/2" straight hose barb	1			
7R001-008	#8 hose clamps	2			
7P100-121	Sealing nut	1			



1993-1995 FORD 5.8 LIGHTNING TRUCK

Part No. 4FC218-040SQ

PARTS LIST

IMPORTANT: Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.

Part Number	Description	Quantity	Part Number	Description	Quantity
2E228-130	SUPERCHARGER ASSEMBLY	1	4FC139-096	PCV BYPASS KIT	1
2E128-030	V-2 SQ Supercharger	1	7U100-055	6" nylon tie wraps	6
2A036-287	2.87" supercharger drive pulley	1	7U030-056	3/8" x 40" PCV hose	1
8R101-001	6 rib pulley retainer assembly	1	7U375-052	3/8" vacuum cap	1
			8H040-020	3/8" inline filter	1
4FC111-021	MOUNTING BRACKET ASSEMBLY	1	4FC130-036	OIL DRAIN ASSEMBLY	1
4FC011-021	Mounting bracket	1	4FC048-186	1/2" x 16" oil drain line	1
4FC010-034	Mounting plate	1	7P375-033	3/8" NPT x 3/8" NPT street elbow	1
7A375-100	3/8-16 x 1" bolts	9	7P375-017	3/8" NPT x 1/2" straight hose barb	1
7K375-040	3/8" AN washers	7	7R001-008	#8 hose clamps	2
4FC112-015	AIR INTAKE ASSEMBLY	1	4FC130-026	OIL FEED LINE ASSEMBLY	1
4FA012-013	90° intake elbow with boss	1	4FC047-176	1/4" x 22" oil feed line	1
4FC012-010	3-1/2" x 20" flex hose	1	7P125-103	-4 x 45° 1/8" NPT male elbow	1
4FC013-021	Air filter cover	1	7P250-066	#4 swivel x 1/4" hose barb fittings	2
7P375-097	3/8" NPT x 3/8" barb	1	7P525-067	.500 crimp ferrules	2
7R002-052	#52 hose clamps	2	7P250-122	AN917 1/4" pipe thread tee	1
7R002-056	#56 hose clamps	2	7P250-123	1/4" NPT x 1-1/2" nipple	1
7S350-200	3-1/2" x 2" sleeve	1	7P250-036	#4 flare to 1/4" NPT fitting	1
4FC112-040	AIR DISCHARGE ASSEMBLY	1	5A101-006	HI-6TR ASSEMBLY	1
4FC012-040	Discharge tube A	1	5A001-009	Crane HI-6TR ignition system	1
4FC012-050	Discharge tube B	1	5A002-002	EFI Ford wiring harness	1
7P156-082	5/32 tee	1	5W001-001	Wire taps	2
7P750-102	3/4 NPT x 1" 90° hose fitting	1	5W001-009	16-14GA male slides	16
7R002-016	#16 hose clamps	4	5W001-010	16-14GA female slides	20
7R002-044	#44 hose clamps	4	5W001-011	16-14GA eyelets	2
7R002-048	#48 hose clamps	2	5W001-017	Large ring terminals	2
7S275-200	2-3/4" x 2" sleeve	1	5W001-019	12-10GA solderless connector	1
7S275-300	2-3/4" x 3" sleeve	1	7E010-048	#10 x 3/4" sheet metal bolts	8
7S300-200	3" x 2" sleeve	1	7P250-125	1/4" tee	1
7U030-046	5/32" x 24" vacuum line	1	7U030-030	1/4" x 24" vacuum hose	1
7U034-016	1" x 3" heater hose	1	7U375-001	36" velcro-hook	1
7U034-016	1" x 4-1/2" heater hose	1	7U375-002	36" velcro-latch	1
8D001-001	Bypass valve	1	5W018-010	18GA x 30" red wire	1
4FC238-068	FMU (WITH LINES)	1	5W018-240	18GA x 30" white/yellow wire	1
6Z110-111	12:1 black fuel management unit	1	5W018-060	18GA x 30" orange wire	1
4FC145-156	Male fuel line assembly	1	5W018-020	18GA x 30" black wire	1
4FC146-166	Female fuel line assembly	1	5W012-000	18GA x 24" red wire	1
4FC049-196	5/32" x 48" vacuum line	1	4FC116-081	WATER PUMP PULLEY ASSEMBLY	1
7U100-055	6" nylon tie wraps	2	4FC016-081	Water pump pulley	1
7E010-046	#8 x 3/4" sheet metal screws	2	7U313-124	5/16-24 x 2.5" studs	4
4FB101-002	FUEL PUMP ASSEMBLY	1	7J312-000	5/16" washers	4
8F001-002	155 Inline fuel pump	1	7L312-000	5/16" lock washers	4
7R003-008	1/2" adel clamp	1	7F312-021	5/16-24 nuts	4
7R003-024	1-1/2" adel clamp	1	4FC040-160	Water pump pilot	1
7R001-004	#4 hose clamps	5	4FE111-032	BELT TENSIONER ASSEMBLY	1
7U100-055	6" nylon tie wraps	6	7J012-092	12mm washers	3
5W001-011	16-14GA eyelets	3	4FA011-032	Tensioner plate	1
5W001-010	16-14GA female slides	3	4GF116-160	Idler ribbed pulley assembly	1
5W118-021	10" 18GA black wire	1	2A017-010	Idler pulley spacer	1
5W118-034	156" 18GA red wire	1	7C012-020	12mm 1.75 x 20mm bolts	2
5W001-002	Fuse tap	1	7C012-022	12mm 1.75 x 22mm thin head bolt	1
7P312-003	5/16" female fuel connector	1	7G010-175	12mm x 1.75 nut	1
7P156-082	5/32" tee	1	4FC116-011	CRANK PULLEY ASSEMBLY	1
7U129-012	5/32" x 12" vacuum hose	1	4FC016-011	Crank pulley	1
7U100-066	11" nylon tie wrap	1	4FC017-041	Crank pulley spacer	1
5W001-012	22GA red solderless connector	1	7A375-325	3/8-16 x 3-1/4" bolts	4
8D002-001	Fuel pressure switch	1	7J375-044	3/8" SAE washers	4
5W001-015	20A blade type fuse	1	7L375-075	3/8" lock washers	4
5W001-014	Fuse holder	1	2A046-580	4060580 Goodyear belt	1
7P125-105	1/8" NPT to 5/32" barb	1			
7U100-001	#10 washers	6			
7F010-032	10-32 nuts	3			
7C011-075	10/32" x 3/4" bolts	3			
7U131-024	5/16" x 24" fuel hose	1			
7U132-030	12mm x 30" fuel hose	1			
7P500-004	Fuel fitting adaptor	1			



1987-1996 FORD 5.0 TRUCK

Part No. 4FE218-070SQ

PARTS LIST

IMPORTANT: Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.

Part Number	Description	Quantity	Part Number	Description	Quantity
2E228-030	SUPERCHARGER ASSEMBLY	1	4FC238-068	FMU (WITH LINES)	1
2E128-030	V-2 SQ Supercharger	1	6Z110-111	12:1 black fuel management unit	1
2A036-312	3.125" supercharger drive pulley	1	4FC145-156	Male fuel line assembly	1
8R101-001	6 rib pulley retainer assembly	1	4FC146-166	Female fuel line assembly	1
4FC111-021	MOUNTING BRACKET ASSEMBLY	1	4FC049-196	5/32" x 48" vacuum line	1
4FC011-021	Mounting bracket	1	7U100-055	6" nylon tie wraps	2
4FC010-034	Mounting plate	1	7E010-046	#8 x 3/4" sheet metal screws	2
7A375-100	3/8-16 x 1" bolts	9	4FB101-002	FUEL PUMP ASSEMBLY	1
7K375-040	3/8" AN washers	7	8F001-002	155 Inline fuel pump	1
4FE112-010	AIR INTAKE ASSEMBLY	1	7R003-008	1/2" adel clamp	1
4FA012-012	90° intake elbow	1	7R003-024	1-1/2" adel clamp	1
4FC012-010	3-1/2" x 20" flex hose	1	7P500-004	Fuel fitting adaptor	1
4FC013-021	Air filter cover	1	7R001-004	#4 hose clamps	5
7P625-002	5/8" hose barb	1	7U100-055	6" nylon tie wraps	6
7R001-008	#8 Stainless hose clamps	2	5W001-011	16-14GA eyelets	3
7R002-052	#52 hose clamps	2	5W001-010	16-14GA female slides	3
7R002-056	#56 hose clamps	2	5W118-021	10" 18GA black wire	1
7S300-075	3" x 3/4" orange sleeve	1	5W118-034	156" 18GA red wire	1
7S350-200	3-1/2" x 2" sleeve	1	5W001-002	Fuse tap	1
7U100-050	5/8" grommet	1	7P312-003	5/16" female fuel connector	1
7U033-000	5/8" x 40" PVC hose	1	7P156-082	5/32" tee	1
4FC112-020	AIR DISCHARGE ASSEMBLY	1	7U129-012	5/32" x 12" vacuum hose	1
4FC012-030	Discharge duct	1	7U100-066	11" nylon tie wrap	1
7S225-125	2-1/4" x 1-1/4" sleeves	2	5W001-012	22GA red solderless connector	1
7S275-200	2-3/4" x 2" sleeve	1	8D002-001	Fuel pressure switch	1
7R002-044	#44 hose clamps	2	5W001-015	20A blade type fuse	1
7R002-036	#36 hose clamps	4	5W001-014	Fuse holder	1
4FC116-011	CRANK PULLEY ASSEMBLY	1	7P125-105	1/8" NPT to 5/32" barb	1
4FC016-011	Crank pulley	1	7J010-001	#10 washers	6
4FC017-041	Crank pulley spacer	1	7F010-032	10-32 nuts	3
7A375-325	3/8-16 x 3-1/4" bolts	4	7C011-075	10/32" x 3/4" bolts	3
7J375-044	3/8" SAE washers	4	7U131-024	5/16" x 24" fuel hose	1
7L375-075	3/8" lock washers	4	7U132-050	12mm x 30" fuel hose	1
2A046-580	4060580 Goodyear belt	1	5A101-001	STAND ALONE ASSEMBLY	1
4FC130-026	OIL FEED LINE ASSEMBLY	1	7P156-082	5/32" tee	1
4FC047-176	1/4" x 22" oil feed line	1	5A002-002	EFI Ford wiring harness	1
7P125-103	-4 x 45° 1/8" NPT male elbow	1	5A001-001	Stand alone ignition retard	1
7P250-066	#4 swivel x 1/4" hose barb fittings	2	7U129-024	5/32" x 24" vacuum line	1
7P525-067	.500 crimp ferrules	2	4FE111-032	BELT TENSIONER ASSEMBLY	1
7P250-122	AN917 1/4" pipe thread tee	1	7J012-092	12mm washers	3
7P250-123	1/4" NPT x 1-1/2" nipple	1	4FA011-032	Tensioner plate	1
7P250-036	#4 flare to 1/4" NPT fitting	1	4GF116-160	Idler ribbed pulley assembly	1
4FC130-036	OIL DRAIN ASSEMBLY	1	2A017-010	Idler pulley spacer	1
4FC048-186	1/2" x 16" oil drain line	1	7C012-020	12mm 1.75 x 20mm bolts	2
7P375-033	3/8" NPT x 3/8" NPT street elbow	1	7C012-022	12mm 1.75 x 22mm thin head bolt	1
7P375-017	3/8" NPT x 1/2" straight hose barb	1	7G010-175	12mm x 1.75 nut	1
7R001-008	#8 hose clamps	2	4FC116-081	WATER PUMP PULLEY ASSEMBLY	1
7P100-121	Sealing nut	1	4FC016-081	Water pump pulley	1
4FC114-033	RADIATOR HOSE ASSEMBLY	1	7U313-124	5/16-24 x 2.5" studs	4
4FC014-010	Stainless radiator pipe	1	7J312-000	5/16" washers	4
7R002-024	#24 hose clamps	2	7L312-000	5/16" lock washers	4
			7F312-021	5/16-24 nuts	4
			4FC040-160	Water pump pilot	1

1. COMPONENT REMOVAL

- A. Remove the following:
 - 1. intake air duct
 - 2. air filter box cover & inlet hoses
 - 3. accessory drive belt
 - 4. cooling fan & fan shroud
 - 5. water pump pulley
 - 6. crank pulley
 - 7. power steering pulley (using a pulley)
- B. Remove the A/C compressor from the mounting bracket and secure to one side.

NOTE: When removing the power steering pump and A/C compressor, do not break any lines; just set the unit aside.

- C. Remove the power steering pump from the bracket.
- D. Remove the cast bracket from the engine and save the fastening hardware.

2. OIL FEED LINE INSTALLATION

- A. Remove the oil pressure sender from the engine block (located just ahead of the oil filter).
- B. Screw the 1-1/2" long 1/4" pipe nipple into the block, then the 1/4" pipe TEE onto the nipple.
- C. Position the TEE so the branch faces forward. Screw the original pressure sender into the branch.

NOTE: Keep all oil fittings and hoses absolutely clean. Use Teflon paste sparingly only on the male pipe threads only. NEVER use Teflon tape. Apply only motor oil to flare fittings. Never over-tighten fittings.

- D. Screw the 1/4" pipe/flare fitting into the end of the TEE as shown. (See Figure 2-a.)
- E. Install the Vortech supplied oil line onto the flare fitting. Cover the loose end with a plastic bag for later.

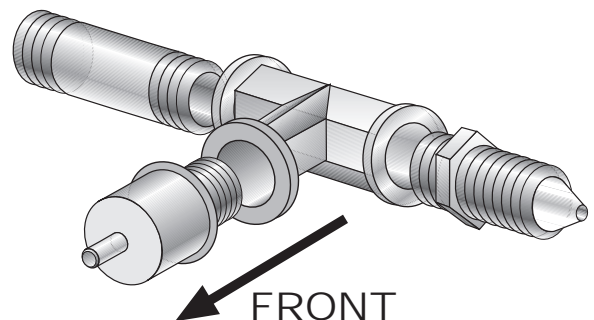


Figure: 2-a

3. OIL DRAIN FITTING

- Remove the driver's side valve cover.
- Measure 4-3/4" forward from the middle of the center bolt hole and up 3/4" from the flange as shown on the inboard side of the valve cover and mark. (See Figure 3-a.)
- Make an 11/16" diameter hole at the mark using a drill or chassis punch. Deburr the hole completely. Thoroughly clean the valve cover.
- Install the 1/2" hose fitting into the elbow and tighten.
- Insert the elbow fitting through the hole in the valve cover so the hose fitting points forward. Secure with the special sealing nut provided in the kit. Make sure to place the sealing side of the nut against the valve cover surface.
- Reinstall the valve cover.

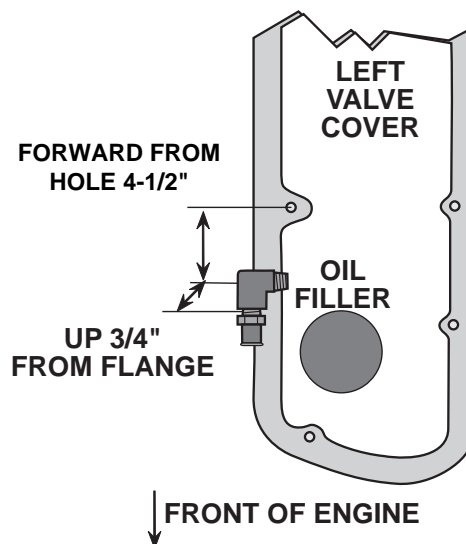


Figure: 3-a

4. CRANKSHAFT PULLEY

- Remove the crankshaft pulley from the engine.
- Place the Vortech provided crank pulley spacer and crank pulley into the stock pulley just removed. (See Figure 4-a.)
- Make sure the pulleys are properly centered. Reinstall as a unit using the 3/8-16 x 2 3/4" bolts and washers provided.

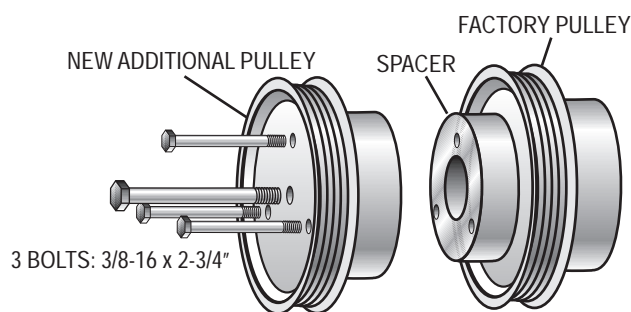


Figure: 4-a

5. MAIN BRACKET INSTALLATION

NOTE: For 5.0 applications, the water pump bolt/stud must be modified. Remove the bolt that is one bolt clockwise from the top center water pump bolt. Cut off the stud portion and reinstall the water pump bolt for mounting bracket clearance.

- Mount the Vortech main mounting bracket to engine using the original fasteners.
- Remount the power steering pump to the new bracket using the original fasteners.
- Reinstall the air conditioner compressor to the new bracket using the original fasteners. (See Figure 5-a.)

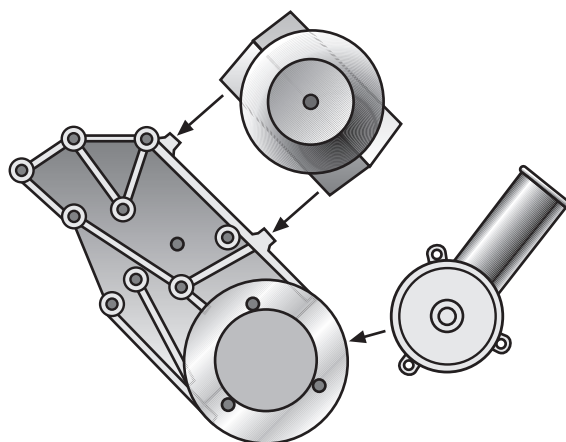


Figure: 5-a

NOTE: On certain models, the Vortech mounting bracket may need to be redrilled and tapped to accommodate the M10 x 1.25 threads for the air conditioning mount.

5. MAIN BRACKET INSTALLATION, CONT'D.

- D. Reinstall the power steering pump pulley. Make sure that the pulley is properly placed on the pump shaft so that the end of the shaft and the front face of the pulley hub are flush.

NOTE: For proper accessory drive belt alignment, it is imperative that the power steering pump pulley be reinstalled properly. There should be no recess nor should there be any protrusion of the shaft. It must be FLUSH.

6. SUPERCHARGER INSTALLATION

- A. Mount the supercharger mounting plate to the main mounting bracket with four 3/8 - 6 x 1" bolts. **DO NOT** use any washers on these bolts.
- B. Install the 1/2" drain hose onto the fitting on the supercharger and secure with the hose clamp provided.

NOTE: Before tightening the clamp, rotate the clamp housing as necessary so that it **DOES NOT** interfere with the mounting plate when installed.

NOTE: On Lightning applications, it will be necessary to remove the coil and bracket. Modify the bracket as shown (see Figure 6-b) and mount the coil onto the thermostat housing bolt.

- C. Lower the supercharger into the bracket and secure with five 3/8-16 x 1" bolts and AN type washers provided in the kit.

NOTE: The supercharger discharge has a different position for either the standard or Lightning applications (see Figure 6-a).

- D. Route the 1/2" drain hose from the supercharger to the fitting on the valve cover and secure. It may be necessary to trim the length of the hose. The drain hose should be routed so that it gradually flows downward with minimal dips and no kinks.
- E. Install the 45° flare to 1/8" pipe fitting into the oil feed fitting on the supercharger and "clock" it so that it points to the 4:00-5:00 position (lower right). Use Teflon paste.
- F. Attach the oil feed line and secure away from all moving parts and the exhaust manifold with tie wraps.

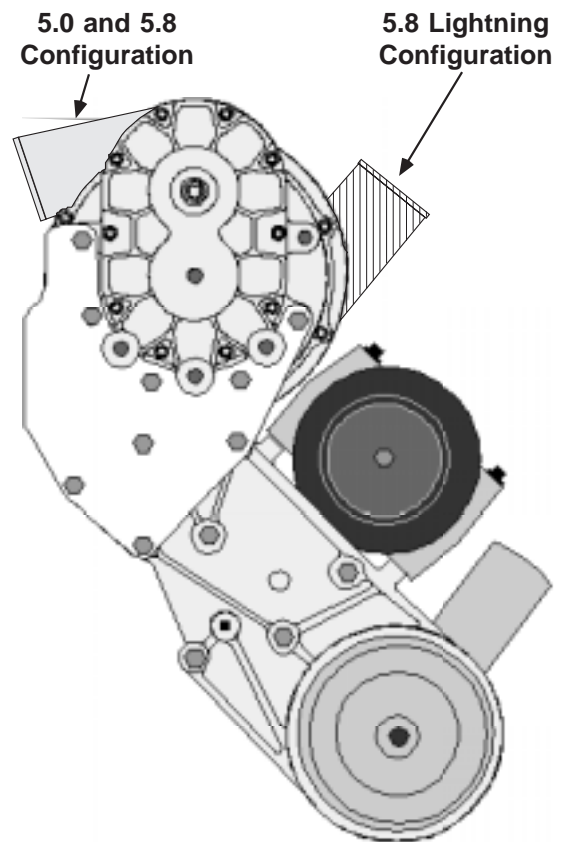


Figure: 6-a

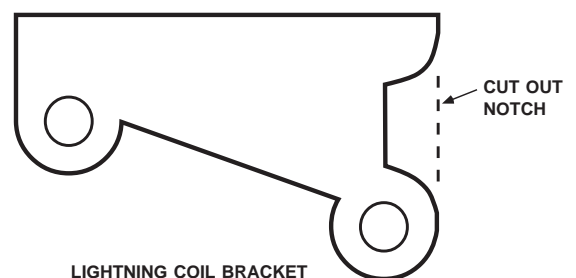


Figure: 6-b

7. OUTLET PLENUM DISCHARGE TUBE

- A. Temporarily place the 2 3/4" diameter blue sleeve on the supercharger outlet as far as it will go.

NOTE: *If installing the kit on a 5.8 Lightning, disregard points B, C and D. Install the discharge tube to the throttle body using the 3" x 2" sleeve and the clamps provided. (See Figures 7-a, 7-b.)*

- B. Slide the two 2" diameter blue sleeves onto the throttle body inlets, temporarily, as far as they will go. It is easier to unscrew and open the clamps and place them after sleeves are in place.
- C. Fit the smaller ends of the plenum into the 2" sleeves and check the alignment with the supercharger outlet. It may be necessary to loosen the bolts on the mounting plate to achieve proper alignment. In some cases the socket head screws on the perimeter of the supercharger must be loosened and the volute housing rotated slightly. Do not over-tighten these screws, torque to 6-8 ft/lbs.
- D. Once proper alignment has been achieved, slide the sleeves onto the plenum and secure with the hose clamps.

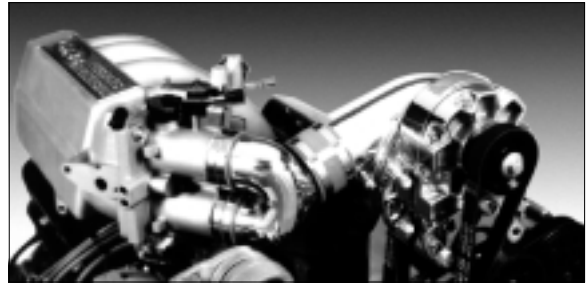


Figure: 7-a - 5.0, 5.8 F-Series/Bronco

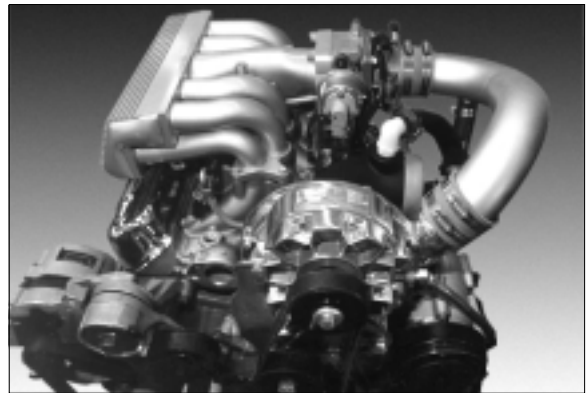


Figure: 5-b - 5.8 Lightning

8. WATER PUMP PULLEY AND FAN ASSEMBLY

NOTE: *On 1993 and later model years, it will be necessary to replace the fan blade assembly (not the entire fan clutch assembly) with an earlier model unit. The Ford part number is E7TZ-8600B.*

- A. Screw the four 5/16" studs into the water pump flange.
- B. Place the Vortech supplied water pump pulley onto the studs.
- C. Lower the fan assembly and fan shroud into place together.
- D. Secure the fan assembly onto the water pump with the nuts and the washers provided.
- E. Secure the fan shroud.
- F. Reinstall the stock accessory belt according to the original diagram.
- G. For 5.0 applications, it may be necessary to shorten the upper radiator hose.
 1. Drain enough coolant to empty the upper hose.
 2. In the middle of the straight hose section over the radiator fan, remove a 3" section.
 3. Place the supplied tube section into the two hose ends as a splice, and secure with the clamps provided.

9. SUPERCHARGER DRIVE BELT AND TENSIONER

- A. Install the supercharger drive belt on the new crank pulley and supercharger drive pulley as shown. (See *Figure 9-a*.)
- B. Install the tensioner assembly onto the supercharger. Make sure the bolt with the narrow head is placed in the slot nearest the idler pulley.
- C. Using a 1/2" drive breaker bar and extension, set the tension on the belt by moving the plate and securing the fasteners.

NOTE: *DO NOT overtighten the fasteners. Torque to 28-32 ft/lbs.*

- D. The supercharger drive belt tension should be about as tight as the accessory drive belt. It will be necessary to reset the tension between 250 and 500 miles after the original installation.



Figure: 9-a

10. FUEL PUMP

- A. Release any pressure from the fuel tank by momentarily loosening the filler cap.
- B. Disconnect the line to the fuel filter by carefully removing the white retaining tab. Attach the line to the adapter fitting, as shown. (See *Figure 10-a*.)
- C. Connect the fuel pump inlet to the adapter with the 3/8" hose provided.
- D. Connect the fuel pump outlet to the filter inlet with the 5/16" hose. Use the supplied Ford fuel connector and hose clamp.
- E. Attach the negative pump terminal to a clean ground fastener with the wire provided.
- F. Mount the Hobbs switch with the 11" tie wrap to the wiring harness located on the driver's side plastic inner fender (or any convenient place free from metal contact).
- G. Connect positive terminal on fuel pump to switch. Attach inline fuse to opposite switch terminal. Connect a length of wire from fuse to fuse box for power supply (30 amp A/C works well).
- H. Connect switch to vacuum source with the provided 5/32" TEE, 1/8" NPT to nipple, and 12" long vacuum line.
- I. Secure the fuel pump and hose with the clamps provided.
- J. After installation is complete, start engine and check system for leakage.

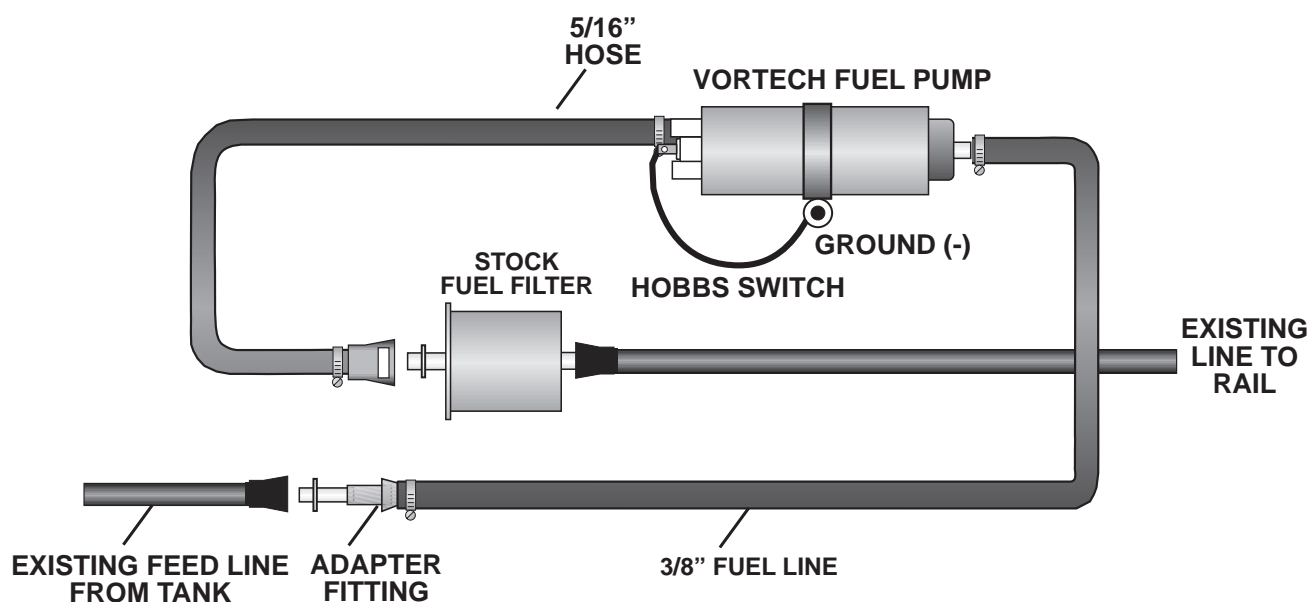


Figure: 10-a

11. FUEL MANAGEMENT UNIT INSTALLATION

- A. Mount the fuel management unit (FMU) to the firewall on the driver's side. Placement should be on the flat area near the top of the firewall just below the hood hinge base and outward from the swinging portion of the hood hinge. Use the sheet metal screws in the kit to secure.
- B. Using a special tool for springlock connectors, disconnect the stock fuel return line where it exits the stock fuel pressure regulator near the fuel rail.
- C. Snap the Vortech fuel line with the male springlock connector into the regulator outlet. Attach the other end to the Vortech fuel management unit inlet. Route the line over the brake booster and through the existing clamps.
- D. Snap the second line with the female springlock connector onto the fuel return line that was connected to the regulator outlet. Connect the other end to the FMU outlet at the center fitting. Route this line along with the first line.

NOTE: Make sure you have routed all fuel lines away from all moving parts, sharp edges, exhaust pipes and manifolds. Secure the fuel lines with the tie wraps and hose clamps provided.

- E. Connect the 5/32" vacuum line from FMU to intake manifold fitting and secure (see Figures 11-a, 11-b, 11-c).
- F. Install the 3-1/2" flex hose between the air filter and elbow and secure with hose clamps.

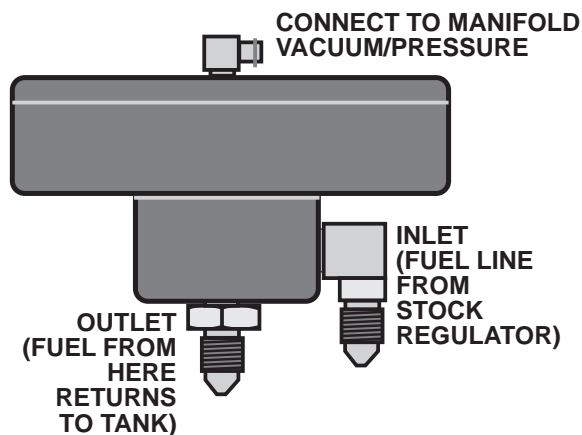


Figure: 11-a

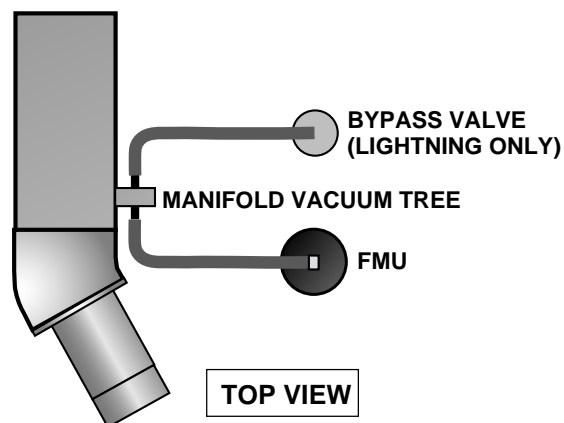


Figure: 11-b

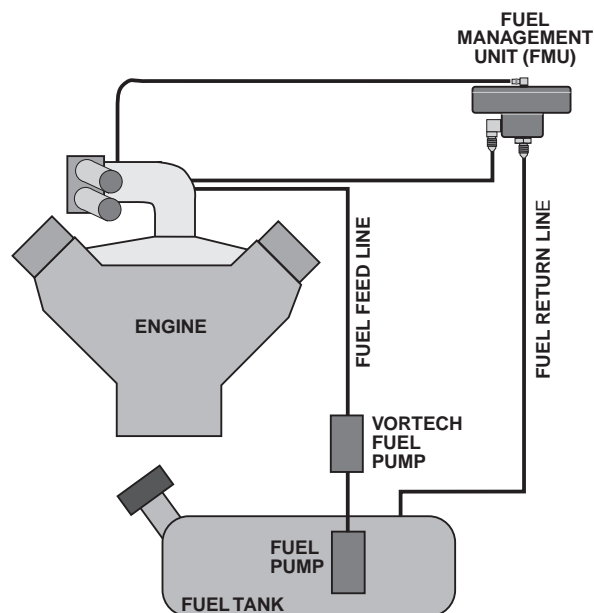


Figure: 11-c

12. AIR FILTER COVER AND INLET DUCT

- A. Secure the Vortech air filter cover in place of the stock air filter cover with the original screws. Replace or clean the air filter element, if necessary.

IMPORTANT: For the 94-96 5.0 and 95-96 5.8, disregard step A and complete the following steps before proceeding to step B.

1. Remove the air filter cover/MAF assembly. Drill a 7/8" hole into the rear portion of the cover (the side facing the brake master cylinder). Reinstall the air filter cover/MAF assembly onto the air box.
 2. Install the supplied 5/8" grommet and barb fitting into the hole previously drilled into the air filter cover.
 3. Route the supplied length of 5/8" hose from the valve cover to the air filter cover. Trim the hose to length and secure with #8 hose clamps.
 4. Slide the orange sleeve onto the MAF housing outlet.
- B. Place the 3-1/2" diameter blue sleeve on the inlet of the supercharger. Insert the 3-1/2" - 90° plastic elbow into the sleeve and face the opening towards the air filter outlet. Secure with the hose clamps provided.
- C. Install the 3-1/2" flex hose between the air filter and elbow and secure with hose clamps.

IMPORTANT: On Lightning applications, it is necessary to remove the tube from the valve cover to the throttle body.

1. Plug the breather tube at the throttle body with the rubber cap provided.
2. Connect the vent tube on the oil filler cap to the fitting on the air box with the filter, hose, and clamps provided.
3. If necessary, trim the hose and secure with the tie wraps.

13. 5.8 LIGHTNING SUPPLEMENTAL INSTALLATION INSTRUCTIONS FOR THE BYPASS VALVE

- A. Screw the fitting into the new inlet elbow as shown in the graphic.
- B. Install the inlet elbow onto the supercharger with the fitting on top and pointing towards the small tube branched off of the discharge tube.
- C. Place the hoses, as shown, on the valve and secure with the clamps provided.
- D. Install the valve with the hoses connected, between the inlet elbow and discharge tube. Secure hoses with the clamps.
- E. Attach one end of the small sensor hose onto the valve.
- F. Connect the 5/32" vacuum hose from the bypass valve to the intake manifold vacuum fitting. See *Figure 11-b* on page 7.
- G. Make sure everything is secure and that no fuel lines or wires have been accidentally moved into harm's way.

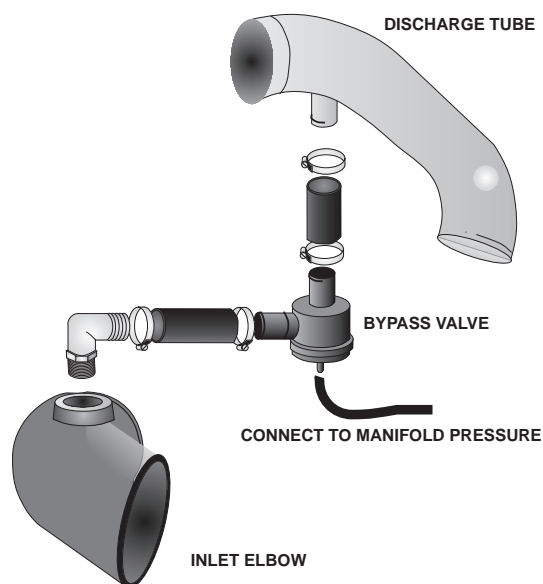


Figure: 13-a

14.1 IGNITION/BOOST CONTROL UNIT INSTALLATION (NON-LIGHTNING TRUCKS ONLY)

- A. The Ignition/Boost Control unit has been prewired for installation convenience. Installation is a simple matter of disconnecting the stock connector at the ignition coil and plugging in the new adapter. Then plug the stock connector into the adapter.
- B. The next step is to provide a good ground for the black wire and mounting the box in as cool a place as possible under the hood. The box should be mounted with the aluminum cover on the bottom.
- C. Splice the supplied 5/32" hose and TEE into the FMU vacuum line and connect to the Ignition/Boost Control Unit (see *Figure 14-a*).
- D. Route the Ignition/Boost Control wires through the firewall from the interior side. Mount the knob in an easily accessible place.
- E. Connect the wires to the plastic oval wiring connector on the Ignition/Boost Control unit using the snap-on connector supplied in the Ignition/Boost Control kit.

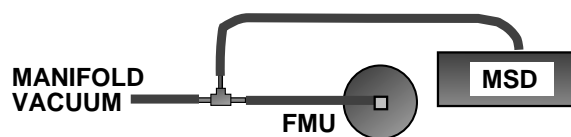


Figure: 14-a

NOTE: The wiring to the Boost/Control knob can be matched to either of the corresponding wires in the boost retard connector.

14.1 IGNITION/BOOST CONTROL UNIT INSTALLATION (NON-LIGHTNING TRUCKS ONLY), CONT'D.

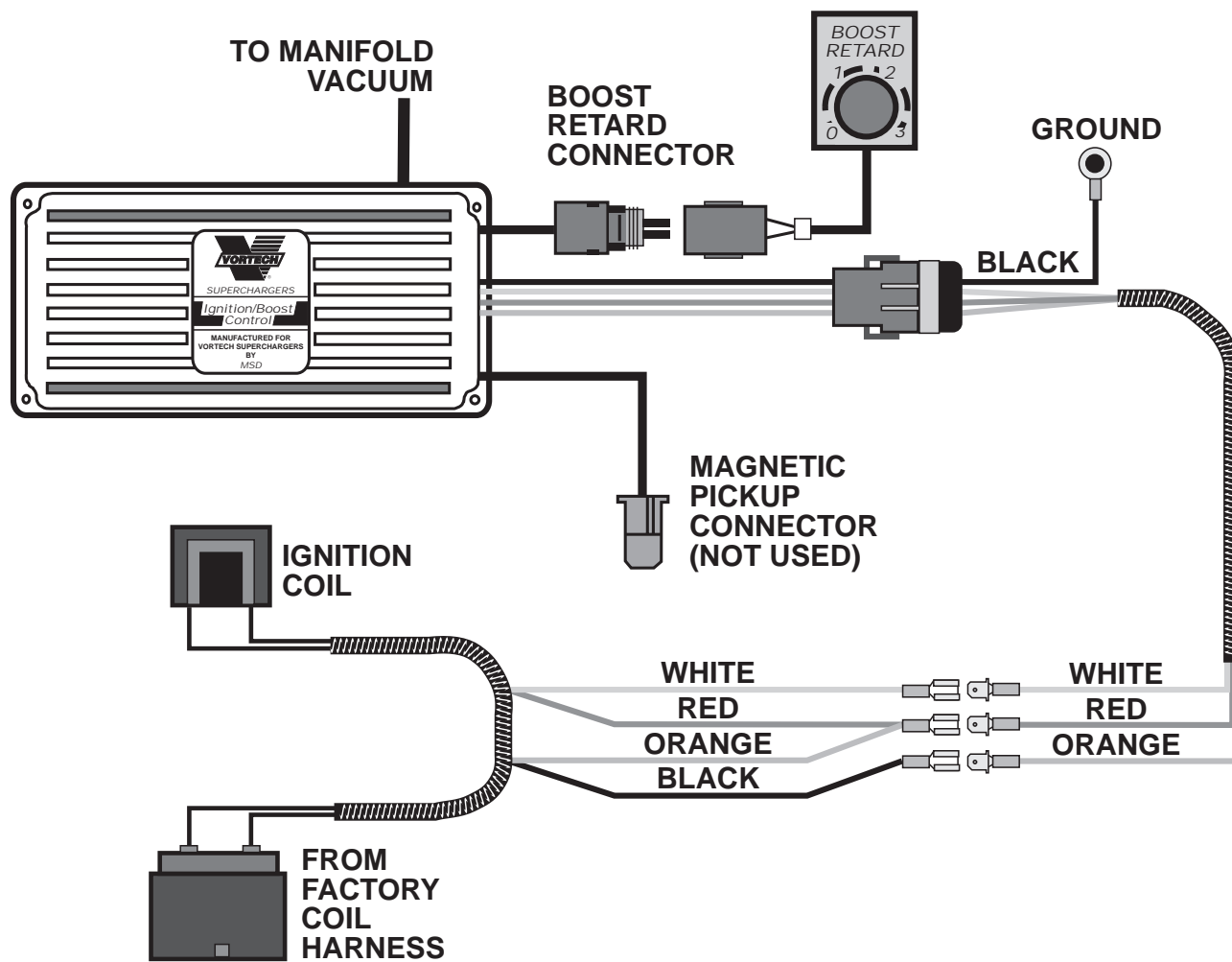


Figure: 14-b

14.2 IGNITION/BOOST CONTROL UNIT INSTALLATION (LIGHTNING TRUCKS ONLY)

- A. Mount the main ignition box under the hood in a location that will keep the unit as cool and dry as possible. Use the supplied sheet metal screws to secure.
- B. Route the heavy black cable to a clean ground. Route the heavy red cable to the (+) positive battery terminal.
- C. Install the ignition/boost retard wiring harness following *Figure 14A-a*.
- D. Mount the retard adjustment knob in an easily accessible position from the driver's seat. Attach the black wire to a clean ground and the red wire to a keyed on 12V power source or to the red wire from the Vortech Ignition box. Tape up the end of the yellow wire to prevent contact with a metal surface. Route the three-wire harness out into the engine compartment and connect to the supplied GM-style map sensor. Route the three-wire harness out into the engine compartment and connect to the supplied GM-style map sensor.
- E. Route the supplied vacuum line and TEE from the map sensor to a boost source on the intake manifold.

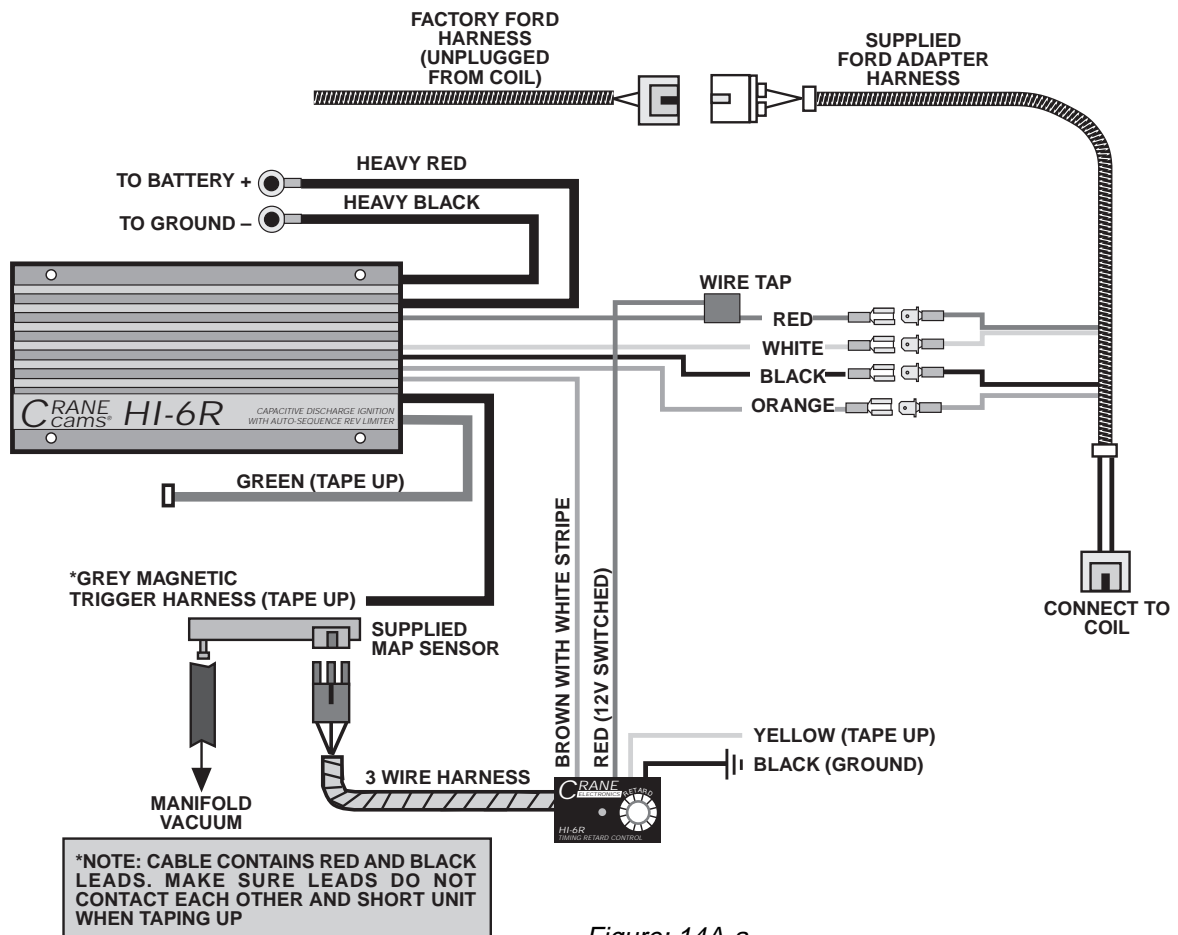


Figure: 14A-a

15. IGNITION/BOOST CONTROL UNIT OPERATION

- A. The Ignition/Boost Control unit is designed to retard ignition in relation to boost.
- B. The unit is adjustable from 0° to 4° of ignition retard for each pound of boost, up to a maximum of 20°. (See *Figure 15-a.*)
- C. Using the 1° per pound position as a starting place, adjust the ignition retard knob until just beyond the point of detonation. Use third gear for testing in a safe area or road. Adjust the retard according to changes in altitude and fuel quality.

Caution: *It is extremely important that the boost retard never be turned to 0° using pump fuel. It is recommended that in stock street applications, the knob be at no less than 1° per lb.*

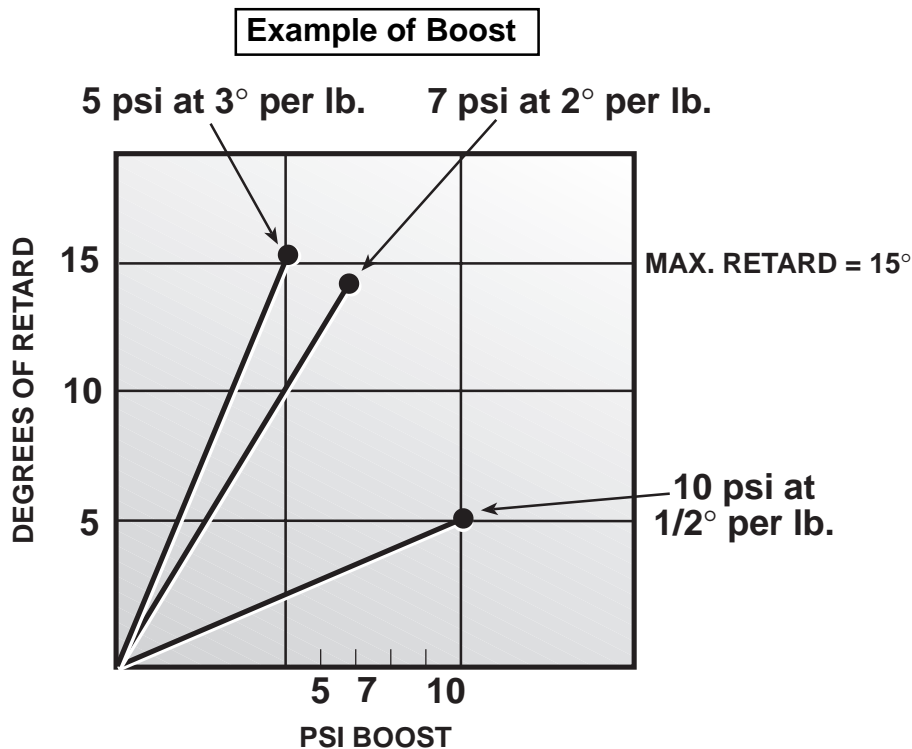


Figure: 15-a

16. FINAL CHECK

WARNING: Do not attempt to operate the vehicle until ALL components are installed and ALL operations are completed including the final check.

- A. Reconnect the battery.
- B. If your vehicle has gone over 10,000 miles since its last spark plug change, you will need to change the spark plugs now before test driving the vehicle.
- C. Check all fittings, nuts, bolts and clamps for tightness. Pay particular attention to oil and fuel lines around moving parts, sharp edges and exhaust system parts. Make sure all wires and lines are properly secured with clamps or tie wraps.
- D. Check all fluid levels, making sure that your tank(s) is/are filled with 92 octane or higher fuel before commencing test drive.
- E. Start engine and allow to idle a few minutes, then shut off.
- F. Recheck to be sure that no hoses, wires, etc. are near exhaust headers or moving parts and for signs of any fluid leakage. Check ignition timing to make sure it is set to stock specifications before commencing test drive.
- G. **PLEASE TAKE SPECIAL NOTE:** Operating the vehicle without ALL the subassemblies completely and properly installed may cause **FAILURE OF MAJOR COMPONENTS.**
- H. Test drive the vehicle.
- I. The supercharger drive belt stretches initially and will require adjustment between 250 and 400 miles.
- J. Read the **STREET SUPERCHARGER SYSTEM OWNER'S MANUAL AND RETURN THE WARRANTY REGISTRATION FORM** within thirty (30) days of purchasing your supercharger system to qualify.



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